

NEWSLINE

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Laser casts new light on defense

By Anne M. Stark
NEWSLINE STAFF WRITER

Laboratory and U.S. Army officials today unveiled a 10-kilo-watt Solid State Heat Capacity Laser (SSHCL) that could demonstrate a new short-range air and missile-defense capability.

The 10-kW system is the highest average power single-beam solid-state laser in the world. The prototype, which eventually will be developed into a 100-kW laser, has been delivered to the U.S. Army's High Energy Laser System Test Facility at the White Sands Missile Range, New Mexico, for testing and evaluation.

The SSHCL has been a joint venture between the Laboratory and the U.S. Army Space and Missile Defense Command, of



MICHAEL ANTHONY/TID

Lab laser technician Balbir Bhachu monitors the operation of the 10-kW Solid State Heat Capacity Laser during low-power testing.

which HELSTF is a division.

The SSHCL program began in 1997 under direct congressional sponsorship. Total funding through 2001 is \$46 million. The

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Airport security looks to Laboratory for expertise on X-ray imaging methods

By Sheri Byrd

NEWSLINE STAFF WRITER

In the Engineering directorate, Harry Martz is the director of the Center for Nondestructive Characterization (CNDC), but he has found himself in the national spotlight recently as a member of the National Academy of Science (NAS) Committee on Assessment of Technology Deployed to Improve Commercial Aviation Security.



A backscatter X-ray can see beneath clothing.

Martz has served on the committee and several of its specialty panels since 1995, contributing to its ongoing recommendations to the Federal Aviation Administration (FAA) concerning X-ray imaging methods. The CNDC uses these technologies for various industrial and stockpile stewardship missions, such as highly detailed, multi-dimensional X-ray images of weapons parts, engine parts and the molds to cast them.

It is these same nondestructive evaluations, as well as some others, that are the emerging technologies in airport screening of passengers, cargo, and checked luggage and carry-on bags.

See **X-RAY**, page 8

Employees, organizations rally to raise funds to help Sept. 11 victims

Lab employees, well known for their charitable giving each year in the HOME Campaign, are spearheading a number of grassroots efforts to help the victims of the Sept. 11 terrorist attacks.

Here's a sample of the outpouring of support from Lab employees:

- Employees in the Plant Engineering carpenter shop decided to donate their salaries for the time they were sent home on Sept. 11 and have collected \$2,700 to date. Donations are being collected through today and all money will go directly to the American Red Cross.

- The Laboratory Services Directorate

See **CHARITY**, page 7

Boeing hails Lab team's work on missile defense

By Don Johnston

NEWSLINE STAFF WRITER

A remote sensor suite that will help verify the effectiveness of a ballistic missile defense system has earned a team of Laboratory scientists and engineers an award from Boeing.

The remote optical characterization sensor suite (ROCSS), based on the Lab's unique capabilities in infrared spectrometry, has been adapted and installed on a Gulfstream IIB aircraft that will fly "intercept missions" to verify that prototype anti-ballistic missiles have hit and destroyed target mock warheads. Boeing is the prime contractor for the National Missile Defense, or NMD.



PHOTO COURTESY OF BOEING

Alex Pertica (center), ROCSS project leader, sitting behind Jim Curry, who's operating sesnsor equipment to be used in missile defense tests.

ROCSS verifies the impact of the prototype interceptor with the warhead by detecting a unique

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data from
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enter
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teaches
the teachers
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LAB COMMUNITY NEWS

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Pre-orders for tamales are now being taken by Amigos Unidos Hispanic Networking Group. The **tamale sale is a fund-raiser** for the American Red Cross. Tamales are \$14 per dozen and \$7.50 per half dozen. Pick-up is on Friday, Oct. 12, from 11:30 a.m. to 1 p.m. at the LLNL pool area. Contact: Yahel De La Cruz, 4-3507; Irene Ortega, Bldg. 113, room 3050; Jessica Barraza, Bldg. 1456, room 1039; Rosa Yamamoto, Bldg. 151, room 1321; Teresa Hauck, Bldg. 153, room 2018; Patricia Martinez, Trailer 2428, room 1020; or Angie Fountain, Trailer 2526, room 105.

Applications are now being accepted for the **Women's Association Scholarship Program**. The program provides financial support to LLNL employees in their pursuit of educational training as a means of career and personal advancement. For complete information on the application process, including eligibility and selection criteria, go to the Website at <http://www-r.llnl.gov/lllwa/scholarship.html> or call Joni Schuldt at 2-4168. Application deadline is Oct. 19.

Volunteers are still needed for the **San Joaquin Expanding Your Horizons in Science and Mathematics Conference** on Saturday, Oct. 6. The conference will be held at the University of the Pacific from 8 a.m. to 2:30 p.m. Volunteers are needed to assist as workshop monitors or in other capacities. Visit the EYH Website for more information, or contact Cary Gellner at 2-0643.

Wednesday
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A representative from **Fidelity Investments** will be onsite to meet with employees. Fidelity Investments are available to UC's 403(b) participants in addition to the UC-managed investment funds. To make an appointment, call the Fidelity central reservation system at 1-800-642-7131. Be sure to specify you are an LLNL employee.



Lab scientist Jim Tucker will offer a talk on what is known about the effects of environmental exposure to humans resulting from diet, cigarette smoke and ionizing radiation, and will give an **update on cancer research** at the Lab on Wednesday, Oct. 10, at 10:30 a.m. in the Bldg. 361 auditorium. His talk is part of the Biology & Biotechnology Research Program Seminar Series.

Ravenswood Progress League is starting a series of five **docent training classes** at Ravenswood this fall beginning Wednesday, Oct. 17, at 7 p.m. at Ravenswood Historic Site, 2647 Arroyo Road. Four more sessions are set for Oct. 24, Nov. 7, Nov. 14, and Nov. 28. These sessions are free and open to the public. Contact: Cindy English, 447-9480, or Maryalice Faltings, 443-0238.

Retirees volunteer for Lab's special blood drive

By Bob Becker

LLNL RETIREE

Communication from Lab retirees has been great lately, and I'll try my best to pass along their news.

With the tragedy in New York, everyone is more aware of the continuing need for blood donations. The Lab and your **Retirees' Association** continue to make great strides in this area. **Barbara Hill** has organized 23 retiree volunteers to handle the registration and staff the canteen. The next blood drive at LLNL is scheduled on Oct. 25. Call Barbara at (925) 447-3033 if you would like to help the American Red Cross and LLESA with this worthwhile effort.

Mary Sites, who retired in June 2000 after 25 years in Lasers, Plant Engineering and Environmental Protection, has been busy traveling to Israel and Oberammergau, Germany. She has moved to Prescott, Ariz. She spent two weeks in Bveius, Romania, working at a Christian orphanage and then went to Budapest and Vienna. She would love to hear from friends. Her e-mail address is marys60@pocketmail.com

D'Anne Miller retired from the Lab in August after a career in the Transportation Systems Management Program. D'Anne invites all retirees to an art exhibition that runs through Oct. 7 at the ArtWorks Gallery in the Old Shenone Building, 2219 First St., Livermore.

Del Cruft, who was involved in weapons work at the Lab since about 1955, sent me a copy of a 50-page summary of his experience as an early nuclear engineer. It covers not only his career before and after the Lab, but also gives a lot of detail of his early days with California Research and Development and covers testing in the Pacific, weapons engineering, a decade of design challenges, consulting in retirement, visits to production facilities from 1956 through 1991, as well as "broken arrow" exercises.

Wesly Murbach, whose association with the Lab goes all the way back to 1952, lived across the street from **Herb York** and didn't know he was the director. Wesly worked for Z Division after a career with Atomics International and currently lives in Tucson.

Tom and Joan Lincicome recently took a two-week trip to France, including an air balloon ride in Champagne and Burgundy. If any of the readers would like more information about a balloon ride, call them at (925) 447-3552

Jules Fabian called and we tried to recall some of the early days at the Lab. He retired in 1985 and had worked as a maintenance machinist and as a technician in the Controlled Thermonuclear Program. He reminded me that we traveled together to Operation Redwing in the Pacific. Like Wesly Murbach, he lived near Herb York and didn't know he was the director of the Lab. (I guess I should explain that technically Herb York was not the director since that title was reserved for E.O. Lawrence. When an organization chart was demanded by the Atomic Energy Commission, one was put together, classified as "restricted with no distribution.") Jules still does some fishing and is thinking about moving from Livermore to Bowling Green, Ky.

Bob Hughey, who went to work in 1951 for the AEC and retired in 1994 and always interacted with Lab employees, lives in Lafayette and still keeps in touch with Lab retirees in the monthly "luncheon with Jim Carothers."

Arturo Maimoni, who worked in Chemistry and retired in 1988, has been keeping himself busy traveling, exploring the Bay Area regional parks, and as a docent in natural sciences at the Oakland Museum.

Arturo is also an arbitrator for the National Association of Security Dealers. Arturo, like many Lab retirees, think that this may be the best time of life.

Stan Ekstrom, who retired in 1983, is now living in Tucson. Stan was a California Research and Development Corp. employee in the early 1950s and stayed with Standard Oil for a decade before returning to the Lab. He would like to know if there are many CR&D employees around. Contact him at florstan@mindspring.com

Jon Bryan warned me that when I mentioned I had not received much e-mail that I might encourage long letters like the one he recently sent me. Well, I hope he is right. Jon gave me several tips on information sources, including Julie Casamajor at the Livermore Library who has a CD-ROM on Livermore Past, 1930-1965. Jon and his wife Gail have been members of the Livermore-Amador Genealogical Society for about 20 years. If you are interested, contact Jon at 925-447-9407.

MaryLou Nelson (DNT) and **Evelyn Heald** returned recently from a two-week trip to Italy and France. They had a great time.

Alice Schwarber was off on another trip to Southern France. She recently saw **Lynn Kelly** (Travel), who still lives in Mindon, Nev.

Since 1993, **George Michael** (Computation) has been interviewing certain computer users who were at the Lab from 1952-1978. His thesis is that some very good work was done that has never been recognized. He has obtained about 60 such interviews. He would like to contact **Bernie Alder**, **Jed Donnelley**, **Maggie Gee**, **Cecillia Larson** and **Nevin Sherman**. If you have any leads, contact George at gmichael@home.com.

Jay B. Chase, who retired in 2000, is trying to generate a history of hydro testing. If you can contribute to this task, contact Jay at 925-422-1679 or chase2@llnl.gov.

It was nice to hear from **Fred Kovar**. He and his wife just returned from a trip to Italy, Austria and Hungary. As some of you may recall, Fred was assigned to Washington D.C. from 1984-86, where he worked as science adviser to the assistant secretary of Defense.

I know I probably lost communications from some retirees. (I've had computer problems as well as a poor filing system.) If you have contacted me and I haven't mentioned it in this column, please excuse me and contact me again.

In the meantime, keep your correspondence coming to Robert Becker, 1690 Frederick Michael Way Livermore, 925-447-3867 or rbecker@aol.com.

Newsline

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AROUND THE LAB



Digital mammography system wins FDA approval

NEWSLINE STAFF REPORT

A Denver, Colo. company that worked with Laboratory researchers has received Food & Drug Administration approval for its digital mammography system.

Fischer Imaging Corporation partnered with LLNL from 1993 to 1996 on digital mammography work under a cooperative research and development agreement with the Lab's Engineering Directorate. The FDA approval was announced Tuesday.

While traditional mammography technology uses film to record the X-ray image, Fischer's new SenoScan digital mammography system records the image electronically.

Digital breast imaging opens the door for many changes in the practice of mammography, said Livermore mechanical engineer Clint Logan, who headed the Laboratory's collaboration with Fischer.

With this technology, images can be acquired at one location and then be rapidly transmitted by computer to another site for interpretation.

"One advantage of digital mammography," noted Logan, "is that rapid collaboration with experts at other locations becomes possible."

Probably the most important feature, however, is that computers can now be employed to aid in the diagnosis or evaluation of a digital image, Logan said.

Digital "copies" have the same high fidelity as original images. Image parameters such as contrast and brightness become display adjustments, not fixed by film chemistry and exposure.

In its application to the FDA, Fischer submitted the results of a 1,500-patient study conducted at UC-San Francisco, the University of North Carolina and other medical facilities over the course of three years.

The study compared SenoScan results with those of traditional mammography.

The FDA approval of SenoScan means, in effect, the federal agency has found the digital system to be safe and effective for use in the same clinical applications as traditional mammography.

With FDA approval, SenoScan becomes available for regular clinical use to treat patients. Previously, it could have only been used in a research setting.

"We are delighted to have received FDA approval for SenoScan and expect to immediately begin the process of providing this technology for the millions of women who employ mammography for early detection of breast cancer," said Morgan W. Nields, chairman of Fischer Imaging.

"SenoScan is a powerful tool for both screening mammography and for more detailed diagnostic studies," Nields added. "Many people contributed to bringing SenoScan to fruition, including university researchers, Lawrence Livermore National Laboratory and especially Fischer's own staff."

"Fischer invested a decade of development and over \$30 million to bring SenoScan to market," said Lou Rivelli, Fischer president and chief executive officer. "It will be our flagship product. The availability of SenoScan has been widely anticipated and we expect to begin commercial shipments

later this year."

LLNL's interest in digital mammography was fueled by work performed for the nation's Ballistic Missile Defense Program, specifically the X-Ray Laser Program.

When the U.S. ended its X-ray Laser Program, the Livermore team turned to digital mammography as a possible area to apply analysis tools and expertise that had been developed for material characterization for the X-ray laser.

"In 1993, Fischer had developed a small-field digital breast imager for image-guided core biopsy," Logan recalled. "Our ideas for screening mammography matched their interests and the LLNL team very quickly became a part of Fischer's team."

"We recognized that we could design a machine that requires less X-ray dose for larger breasts than conventional mammography. Fischer made this a design goal from the beginning. Fischer also chose to accommodate a larger field of view than the other FDA cleared system."

"This virtually eliminates the need for multiple exposures to cover the entire breast."

Logan continued, "We learned a lot working with Fischer. We last worked on SenoScan in 1996, but have followed Fischer's progress in gaining FDA approval. This feels like a tremendous victory."

In addition to Logan, another key LLNL researcher who contributed to the Fischer-Livermore collaboration was electronics engineer Jose M. Hernandez. Hernandez performed the computer programming to simulate the transport of radiation through human tissue.

SECURITY UPDATE

Computer virus attacks increase

The events of recent weeks have caused us all to be more vigilant about protecting our resources. Whether the recent "Nimda" virus was part of a concerted terrorist effort, virus activity aimed at government computer networks has increased noticeably.

Following on the "Nimda" threat, the "W32.Vote.A@mm" virus has now begun infecting computers across the country and it is clear that more are likely.

The Lab's site license for Norton AntiVirus soft-

ware constantly provides anti-virus definitions that are updated in real time whenever a new virus appears. This allows employees to keep their computing resources safe as long as they update their software for each new threat. LLNL's Computer Security Program urges all employees to set their Norton AntiVirus software, using its "scheduler" feature, to automatically update their virus definitions at least once a week.

Considering recent events, the Lab's Computer Security believes it will continue to see an increase

in cyber attacks as well as an increase in the sophistication of those attacks.

Please pass this warning on to any employees who may not receive this notice. Consult your Norton AntiVirus "Help" menu for scheduling instructions or contact your system administrator. If you need additional help setting your anti-virus software, call your SND Central Help Desk at 4-HELP; but please set your weekly anti-virus upgrade right away. It will protect your computer and all of the networks to which your computer is connected.

TELLER SYMPOSIUM 2001



MICHAEL ANTHONY/TID



RICHARD FARNSWORTH/STEP

More than 100 teachers attended the two-day Edward Teller Science & Technology Education Symposium at the Laboratory last week. During the opening presentation, Director Emeritus Edward Teller addressed the teachers. Here, Rick Freeman, chair of the UC Davis Department of Applied Sciences, chats with Teller. At right, Geri Horsma, a teacher from Gunn High School in Palo Alto, participates in a hands-on workshop with Lab biologist Joanna Albala. The symposium was offered through a collaborative partnership with the newly founded Edward Teller Education Center, ETEC (<http://etec.ucdavis.edu>).



NEWS YOU CAN USE

Wide range of ergonomic videos offered by Hazards Control

One glimpse at the catalog of videos maintained by Hazards Control’s Safety Education and Training (SET) section and you’ll realize that ergonomics covers concerns broader than repetitive stress injuries suffered from keyboarding.

Several videos deal with back care and others look at injuries encountered from improper use of hand tools.

“The Finest Tools,” a video from the National Institute for Occupational Safety and Health, offers ergonomic tips for workers who do repetitive jobs with their hands.

A commercially produced video titled “Ergonomics — Preventing CTD’s” (Employee Module) centers on cumulative traumas disorders (CTD) that are a result of using hand tools improperly.

There is also a 15-minute video titled “Office Ergonomics” that discusses ergonomics of the office environment, pointing out that minor job stresses often result in stiff or aching muscles that

can lead to the development of CTD.

A companion video for office workers is “Video Display Terminal Ergonomics,” which provides information on lighting, glare, seating, work surfaces, job design and other factors related to the video display terminal work environment.

You can learn about the videos by going to the Hazards Control Department internal Website and visiting the Video Library, which is available through the training hotlink (to access the Video Library page directly use the following URL: <http://www-hctrain.llnl.gov/SET/VideoLib.html>).

Once on the Video Library page you will see several pull-down menus, including one for ergonomic videos. Access this pull-down menu to see ergonomic video titles. You can get a brief description of a video by clicking on its title.

Laboratory employees may check out up to three videos at a time. Videos can be picked up at the Hazards Control Training Center (T-3679). If

you prefer, you can call ext. 3-1094 to have them sent to you.

Here are the ergonomic titles currently in the Video Library and the videos’ running times.

- “Good Back, Bad Back” (20 minutes)
- “How to Work All Day Without Hurting Your Back” (41 minutes)
- “Back Safety — The Ergonomic Connection” (13.30 minutes)
- “Back Support” (5 minutes)
- “Back Strains on the Job” (25 minutes)
- “Lifting: Don’t Hurt Yourself” (15 minutes)
- “The Finest Tools” (22 minutes)
- “Carpal Tunnel” (5 minutes)
- “Carpal Tunnel Syndrome” (10 minutes)
- “Ergonomics — Preventing CTD’s, Employee Module” (17 minutes)
- “Office Ergonomics” (15 minutes)
- “Video Display Terminal Ergonomics” (20 minutes)
- “The Adventures of Ergoman” (21 minutes)

Technical Meeting Calendar

Friday
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CHEMISTRY & MATERIALS SCIENCE
“Towards Magnetic Resonance of Vibrationally Excited Diatomic Molecules,” by Sarah Cureton Chinn. 10 a.m., Bldg. 151, room 1209 (uncleared area). Contacts: Robert Maxwell, 3-4991, or Bonnie McGurn, 3-2764.

INSTITUTE FOR SCIENTIFIC COMPUTING RESEARCH
“QMTest and QMTrack: Testing Code and Tracking Progress,” by Mark Mitchell, CodeSourcery, LLC. 2 p.m., Bldg. 451, room 1025 (uncleared area). Contacts: Gary Kumfert, 4-2580, or Leslie Bills, 3-8927.

PHYSICS & ADVANCED TECHNOLOGIES
“Characterization of the VISA FEL: Saturation, Nonlinear Harmonics, and Electron Beam Microbunching,” by Aaron Tremaine, UCLA. 10:30 a.m., Bldg. 219, room 163 (uncleared area). Contacts: Jeff Gronberg, 4-3602, or Pat Smith, 2-0920.

INSTITUTE FOR GEOPHYSICS & PLANETARY PHYSICS
“The Hidden Truth About the Cosmic X-ray Background Radiation,” by Edward Moran, UC Berkeley. Noon, Bldg. 319, room 205 (open area). Contact: Joanna Allen, 3-0621.

MATERIALS SCIENCE & TECHNOLOGY
“Solar Car Racing: Driving Technology Forward,” by Jennifer Harper. 3:30 p.m., Bldg. 235, room 1090 (uncleared area). Coffee and cookies will be served at 3:20 p.m. Contact: Thomas E. Felter, 2-8012.

BBRP, CMS, E&E, EPD
“Bacterial Community Dynamics During Treatment of Petroleum Contaminated Soil,” by Christopher Kitts, Cal Poly State University. 11 a.m., Bldg. 361 auditorium (uncleared area). Contact: Carola Laue, 2-3192, or Rosa Yamamoto, 2-0454.

CENTER FOR GLOBAL SECURITY RESEARCH
“The Current Situation in India,” by Ram

Rajan Subramanian, Institute for Defence Studies and Analysis, New Delhi, India. 10 a.m., Bldg. 132S, room 1784. Contact: Tami Alberto, 2-5969.

ELECTRONICS ENGINEERING
“Software Methodology for Reconfigurable Hardware Implementation: a Primer,” by Maria C. Isaac, Celoxica Inc., 9:30 a.m., South Cafeteria, room 113 (open area). Contact: Virgil Kohlhepp, 4-4486.

DEPARTMENT OF APPLIED SCIENCE
“The Physics of Extremely Intense Laser Beams Interacting with Solid Density Matter,” by Richard R. Freeman, UC Davis Department of Applied Science. 4 p.m., Bldg. 661 (Hertz Hall), room 7 (open area). Refreshments served at 3:30 p.m. for a “meet the speaker” session before seminar and at 5 p.m. after the seminar. Contact: Estelle Miller, 2-9787.

INSTITUTE FOR SCIENTIFIC COMPUTING RESEARCH
“Application of Probe-Based Storage to High Performance Computing,” by Zachary Petersen, UC Santa Cruz. 2 p.m., Bldg. 451, room 1025 (uncleared area). Contacts: Steve Louis, 2-1550, or Terry Garrigan, 3-6209.

LIVERMORE COMPUTING
LC customers’ monthly meeting. 9:30 a.m., Bldg. 111, Poseidon Room (cleared area). Contact: Teresa Delpha, taf@llnl.gov.

INSTITUTE FOR SCIENTIFIC COMPUTING RESEARCH
“Using Visualization to Understand the Behavior of Computer Systems,” by Robert Bosch Jr., Stanford University. 10 a.m., Bldg. 451, room 1025 (uncleared area). Contacts: Jeff Vetter, 4-6284, or Leslie Bills, 3-8927.

MATERIALS RESEARCH INSTITUTE
“What is an Insulator? Is There a Quantitative Measure? A New Formulation that Leads to an Experimentally and Theoretically Accessible

Measure of Localization,” by Richard M. Martin, University of Illinois and LLNL. 3:30 p.m., Bldg. 219, room 163 (open area). Contact: Joanna Allen 3-0621

INSTITUTE FOR SCIENTIFIC COMPUTING RESEARCH
“Coupled Eulerian-Lagrangian Simulations of Detonation Induced Shock Response in Tantalum,” by Daniel Meiron, California Institute of Technology. 10:30 a.m., Bldg. 451, room 1025 (uncleared area). Contacts: David Brown, 4-3557, or Leslie Bills, 3-8927.

MATERIALS SCIENCE & TECHNOLOGY
A presentation by Turgut Gur, Geballe Laboratory for Advanced Materials, Stanford University. 3:30 p.m., Bldg. 235, room 1090 (uncleared area). Coffee and cookies will be served at 3:20 p.m. Contact: Thomas E. Felter, 2-8012, or see <http://www-lam.stanford.edu/bios/gur.html>.

CHEMISTRY & MATERIALS SCIENCE
“Computational Studies of Combustion Systems Pertinent to NOx and Incipient Soot Formation,” by Lyudmila Moskaleva. 10:00 a.m., Bldg. 151, Stevenson Room 1209 (uncleared area). Contacts: Andrew Quong, 2-5641, or Bonnie McGurn, 3-2764.

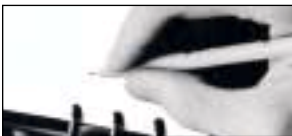


OCTOBER 9-12 SCI COMP
“Scicomp 4, The Fourth Meeting Of The IBM SP Scientific Computing User Group,” in Knoxville, Tenn. Contact: Bronis de Supinski, 2-1062.

The deadline for the next Technical Meeting Calendar is noon, Wednesday.

Send your input to tmc-submit@llnl.gov.

NEWS OF NOTE



MACHO project yields dark matter data

By Anne M. Stark
NEWSLINE STAFF WRITER

A project supported by the Department of Energy and the National Science Foundation to determine the nature of dark matter in the halo of the Milky Way has yielded a treasure trove of data on 73 million stars, many of them variable. This database, created by an international team in Australia and the United States, has been made available to astronomy researchers worldwide via the Internet.

The Massive Compact Halo Objects (MACHO) team scrutinized the Large and Small Magellanic Clouds, two galaxies that orbit the Milky Way, and the bulge of the Milky Way in an eight-year search for massive objects, such as planets or brown dwarfs, believed to make up much of the dark matter there. These objects can be detected through gravitational lensing, in which the light reaching Earth from the extra galactic stars is magnified due to the gravitational force generated by the massive objects.

As a byproduct, the search yielded images and light curves of 73 million stars. The brightness of many of these stars varies in a regular pattern, and their light curves chart the pattern.

“A particularly useful feature of this data release is that we provide period, amplitude and tentative classification information in a catalog for periodically varying stars in the Large Magellanic Cloud,” said the Lab’s Kem Cook, who has led the variable star work for the project.

“The light curve is a window into the heart of a star, providing us with information that is not available in any other way,” said Morris Aizenman, a senior science adviser at the National Science Foundation. “As these data are analyzed by the world’s scientific community, they are certain to reveal some surprises.”

The Cepheid variables, one type of variable star, are useful as “meter sticks” for measuring distances in the universe. Other potential uses of the data include studying the interiors of stars and their evolution, and estimating the age of the universe.

The light amplifications sought by the MACHO scientists are so rare that, in order to generate useful data, they examined millions of

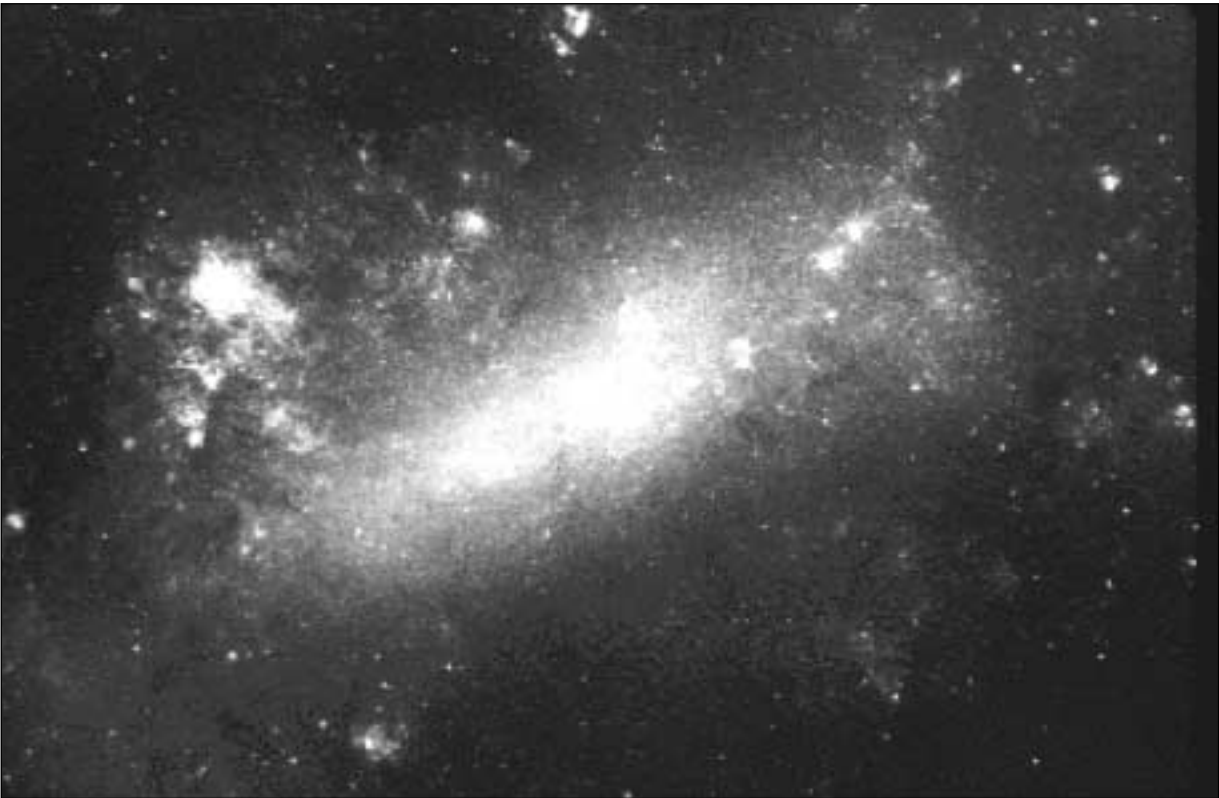


PHOTO COURTESY MACHO PROJECT

The Large Megallanic Cloud, one of the two galaxies scrutinized by the Massive Compact Halo Objects (MACHO) team, an international collaboration between Australian scientists, the UC Center for Particle Astrophysics and LLNL.

stars in more than 200 separate regions, using the 1.3-meter Great Melbourne Telescope at Mt. Stromlo Observatory, Australia. They found almost 20 potential candidates for massive objects in the halo of the Milky Way in a partial analysis of their data.

The lightcurves, along with images and a catalog of the variable stars, are available for viewing or downloading from the MACHO project Websites at <http://www.macho.mcmaster.ca> and <http://www.macho.anu.edu.au>. Sophisticated search engines and image analysis tools assist researchers accessing the data.

“The combination of large databases and computational tools are speeding scientific discovery in all fields, and we wanted to expand this capability for astronomers,” said U.S. team leader Charles Alcock of the University of Pennsylvania. Alcock started the MACHO project at Lawrence

Livermore in 1990 along with Cook and Tim Axelrod, formerly of the Laboratory and now of the Australian National University.

Another team member, Robyn Allsman of the Australian National University, took the lead in making the data available.

“The MACHO Web delivery system grew from my determination that the data should outlive the MACHO Project itself,” Allsman said. “Use of emerging standards, such as GLU and XML, enabled the data to merge into the evolving network of linked astronomical data catalogs, and position it for inclusion in future virtual observatories.”

The MACHO project received support from the NSF-supported Center for Particle Astrophysics at the Universities of California at Berkeley, Santa Barbara and San Diego; LLNL, and the Australian National University.

ISSM reaches two management milestones

Work on the Laboratory’s Integrated Safeguards & Security Management (ISSM) program is moving forward. “Two assessment milestones have been met and work is beginning on a more detailed project plan,” said Dennis Fisher, associate director for Safety, Security and Environmental Protection.

The goal of ISSM is to effectively integrate safeguards and security into Laboratory management and work practices at all levels so missions are accomplished securely.

The first step in the planning process was conducting a “gap” analysis of the Lab’s security policies and procedures. The gap analysis identifies areas for improvement within the Lab’s safeguards and security policies and procedures. The final report, which was submitted to UC and DOE in August, is the result of data gathered over several months from focus groups representing a cross section of the Laboratory population, direct employee input and directorate ISSM points of contact.

“This is not just a Safeguards & Security project,” said Fisher, “This is a Lab-wide effort.”

Overall, the comments focused on making employees’ jobs easier to accomplish while maintaining appropriate security. Among the



issues identified in the analysis were streamlining security, lessening the bureaucratic requirements where feasible and providing better tools such as online resources and training to assist employees in better understanding their roles and responsibilities. The gap analysis also found a need to improve information processes to managers and employees, as well as the feedback on security issues and concerns.

“The analysis found the current Laboratory

security system is doing a good job, but there are opportunities for improvement and making it more efficient,” said Edwin Tippens, a member of the ISSM Implementation Team. “We want to build on our program to make it even better.”

The next step for the ISSM Implementation Team, working with the directorate points of contact, was to prepare a general action plan to address the various gaps identified in the analysis. The plan was submitted to DOE and UC for approval on Thursday.

Once that plan is approved, the Implementation Team will prepare a detailed project plan. The approach the Lab will take to bridge these gaps in order to reach the various ISSM milestones will be up to several task teams, which will be chosen shortly. Each task force will take on one of approximately six issues. Each team will consist of two co-leaders, one from Lab programs, the other from Safeguards & Security, said Tippens.

The University has committed to implementation of ISSM at its national laboratories by December 2002. Additional information on ISSM including a copy of the gap analysis can be found through the Grapevine in the Security section or by going directly to: <http://www-security.llnl.gov/SSDPub/SSP/ISSM.HTML>.



CLASSIFIED ADS

See complete classified ad listings at
<https://www-ais.llnl.gov/newsline/ads/>

AUTOMOBILES

1996 - Ford Explorer XLT 4X4, 5-spd manual, Goodyear tires, full mechanical inspection, excellent condition, includes Yakima sport rack system, \$12,500 OBO. 925-373-3340

1984 - Toyota Previa LE AWD Van. Blue ext/int, super-charged engine, A/C, in-dash CD, 84K miles, recent tires. Excellent family transportation \$8500. 925-519-2130

1978 - /530i-BMW-240K/Miles original owner- Engine 120K/miles. Lots of power. Runs great. Smogged last week.Ready to go. Clean. \$2800. Slept indoors. 925-838-9038

1995 - Volvo 850 Turbo 4-door sedan, exc cond, white w/beige leather int, AM/FM/CD, moon-roof, power steering/ windows/locks, 120K, bring fair blue book ofr 925-449-6367

1988 - BMW 635csia, 2-dr coupe, silver/gray int, excellent condition, p/s, p/b, p/windows, sun roof, auto trans, a/c, cruise control, 157K mi, \$8000, 925-838-7597

1985 - Jeep Wagoneer, new tires, windshield and more \$800.00 209-832-3135

1982 - Subaru GL Wagon 4WD, exterior/interior rough, runs good, new tires. \$900.00 209-838-1490

1960 - Chevy Impala, 2DR Hard Top, 283 with Auto Trans, A/C, \$3,800 or trade for truck/Jeep 209-652-3730

1994 - FORD ESCORT GT runs great, 68K, \$4500 925-373-2516

1995 - Ford Windstar GL mini-van. All the standard GL accessories and extras. 63,000 mi. Excellent maintenance. Excellent condition inside and out. \$7,900. 925-830-0637

1996 - Ford Thunderbird LX, V-8, auto, air, all power, Red with Grey int, only 37K miles, \$9,750.00 or B/O 925-634-8523

1993 - Wheelchair accessible van, Ply-Grand Voyager, air susp, fold-out ramp, tie downs, fully loaded, mint, only 58k miles; \$23,250 aft 6pm 209-832-2056

1995 - Mercury Tracer, Drk.Grn, 4dr.,5 speed, 100kmi, loaded, new trans.Very good condition. 209-239-6402

1991 - Camaro RS,Color: Black,120K miles,T-top,5.0 liter,interior excellent,CD player runs good \$4,500 OBO 925-706-2971

2000 - Honda Accord EX Coupe, Silver w/spoiler, 4 Cyl, CD, Cass, loaded, excellent condition, \$18,800. 209-833-7056

1990 - Olds Cutless SL Louded/New tires Low Miles 5,300 RUNS GREAT 4,000. 925-443-1847

1991 - 91 Miata, White, w/hardtop, 54K Miles, PS PB PW AC, AM/FM/Cassette, shop manual, excel condition, \$6,500. 925-443-3760

AUTOMOBILE ACCESSORIES

Ford 302 heads. Completely rebuilt and ready to bolt on. \$500 925-455-1967

Car cover, universal, blue canvas. Great condition. Paid \$100. \$25. 925-648-0671

Carburetor, Edelbrock #1400, 4 barrel 600 CFM CA legel, Electric Choke, ERG and vacuum ports. Used 8 mo., to big for my engine. \$270.00 new, \$140.00 925-443-7729

4 Tires w/ Rally rims-205/60 R15. Fits Chevy 5 lugs. \$500 OBO.Cell# 925-548-4524. Home# 925-371-7066

Third seat for 97 expedition, gray cloth, \$100 or best offer. Call after 6 pm or weekends. 209-825-1776

BICYCLES

Childrens Diamond Back mountain bike. 20 inch wheels, 18 speeds. Great second bike for 7-11 year old child. \$40.00 925-606-6515

Trek 12 speed road bike. Steel frame Shimano 105, Look pedals. Good cond. \$90./BO. 925-443-3447

BOATS

1976-19ft. Sea Ray Seville bowrider. New canvas top. Recently mechanic tested & maintained. I/O motors.V8 engine. 209-463-9900

Aluminum boat w/ trailer, 14ft, 20hp. motor. \$1000.00 209-481-6375 or 925-443-3883

CAMERAS

CamCorder, full-size RCA CC-250, with a problem. Records and plays almost always, but shuts down sometimes. Two batteries and VCR cable. \$20.00 OBO 925-443-7729

ELECTRONIC EQUIPMENT

25 inch TV console. Maple color wood. Good condition. Lost remote. \$45/obo. 209-832-2790

B&W PowerMac G3 350 mHz, 128 mb memory, 6 gb disk, DVD-ROM, keyboard, mouse. \$500 Monitor extra. 925-634-3371

Macintosh Laser Writer II, commercial quality printer. Excellent. \$50.00/offer. 925-606-6515

TV GE 42 inch. Just back from checkup. Great Picture. Oak trim cabinet. Will not fit in opening. \$200 obo. 925-449-3737

GIVEAWAY

Giveaway: Four- new, fluorescent bulbs. Six foot length with round tip ends. 209-544-6266

Chrysler Cordova. Free 2 a good home. U haul U keep. 209-957-3289

Macintosh StyleWriter b/w printer. 925-606-6515

Stanley, electric garage door opener with remote. Works fine. All parts and instructions. 209-544-6266

HOUSEHOLD

Pecan wood end tbl & Butlers coffee tbl by Bernhardt,† \$75 both.† Teak table, 36x54, ext to 92, \$50. 925-373-7766

Bunk beds,solid maple, New England made, with mattresses, \$200. 925-447-0666

Gas dryer; electric stove; 3 water beds; reclining chair; 4 wooden bar stools; coffee/end tables; and a large desk. 925-373-1468

Waterbed - Super twin mattress, very good condition, dark wood, 12 drawers, headboard, \$175 OBO 925-447-3497

Dishwashers (2): Both are built in. GE potscrubber, white, only 7 yrs old. Both in very good condition. Call for prices. 925-449-7570

Designer convertible sofa. Custom fabric. Excellent condition. Cost \$1600 new; sell for \$350. 925-449-2230

Refridgerator-Kenmore Harvest Gold color, top freezer - 19 cu ft- attractive -good condition- icemaker available - \$50 w/o icemaker, \$75 with 925-447-8415

Toddler table and chairs, wood w/ washable surface \$25, LittleTikes car \$10, Boppy pillow \$10, Graco jumper \$15. 925-454-0877

Hutch, Danish Modern, teak veneer, glass display doors on upper section, very good condition, \$75 925-443-5549

REFRIGERATOR - Magic Chef, 11 yrs old, works great. \$75 OBO. In Stockton. 209-957-2959

Like new futon frame \$25/bo, Large heavy metal desk \$20/bo, Old usable computer chair \$10/bo 925-454-9431

Two 4 light fluorescent fixtures (20 x 52 inches). Solid oak crown molding. (new \$120) \$50 OBO. 209-239-5685

Apples, Golden Delicious, 20 cents per pound, lunch box size. 925-447-4521

Hooked on Phonics, Reading and Math for all ages, excellent condition, \$85. obo. 925-443-3970

BED: Full size, hardly used, excellent condition \$225 209-823-3211

LOST & FOUND

Prescription Eyeglasses in a hard brown case left in a bicycle outside of b111 on Friday, Sep. 14. 510-482-5359

MISCELLANEOUS

Fit-One Exercise Ski Machine. Like new. Paid \$300. Sell for \$50. 209-832-2790

YARD SALE 09/29/01 household items, clothes 714 Catalina Drive, Livermore 925-606-6338

Agapanthus: 4 inch pots, 16 oz cups \$1.50 each or 4 for \$5 925-447-6192

Ryobi Trimmer Plus, gas powered string trimmer, brush blade, blower vac attachment, used 1 season, like new, \$125

925-462-2543

Carpet Kit - Fits small size, short bed truck. Excellect condition. \$150.00 925-449-8035

Hamilton VR-20 electric drafting table/accessories, \$150. 925-447-5399

Woodworking router table top 24x32x1-1/8 inches. With lexan router insert. Good condition \$20. 925-447-9650

Solid walnut cabinet 68 inches wide, 32 inches high, 21 inches deep, 4 sliding doors \$150.00 or best offer 925-447-4521

MATERNITY CLOTHING: Fall/Winter, size XL, excellent condition, all for \$70. Spring/Summer also available. 209-823-3211

MOTORCYCLES

2000 - SUZUKI DR650 dual sport, only 1400 mi, like new, garage kept, paid 6k new, moving must sell \$3500firm 925-961-0601

1970 - Honda Trail 70 on/off road mini motorcycle. This Trail 70 is in excellent original condition, starts and runs strong. \$799. 925-371-8257

PETS & SUPPLIES

Alaskan Husky, young male adult. Playful, friendly, likes cats, needs room to run. Free to a good home. Save me from the pound! 510-582-0333

Chinchilla + cage and accessories. Cuddly pet with nice personality. \$35 209-239-5685

Lab Puppies: Yellow, 1 female and 1 male, 4 months old. All shots given. AKC papered, and great lineage. \$550.00 209-754-3327

Free to a good home: Black and Tan miniature dachshund named Roscoe. Fixed, all current shots, about 2.5 years old. 925-454-1439

RECREATION EQUIPMENT

Nordic track, \$100. 925-447-0666

Yakima Bike Rack, mounts on the rear spare tire of a Jeep or SUV, holds two bikes, excellent condition \$50.00 925-373-1166

Booster Seat, for small child 30 to 80 pounds, use with built-in harness or car seat belt, excl. cond. \$35. obo 925-443-3970

Weight machine AVIA Infinity multi-stations 150lbs excellant cond \$150.00 u-haul 510-537-0698

Portable pool. Large 15 x 22 x 4 ft including filter/pump & pool sweep. 2 months old. \$5000 new \$2000 u-haul. 209-239-0663

Weider exercise bench with most bands, \$40/bo 925-454-9431

1978 Starcraft Tent Trailer. Great condition. \$1500 925-443-6268

Portable Basketball Backboard/Hoop, good condition. \$100. 925-485-1988

Backpacking equipment. Kelty 3 person/ 3 season tent. \$50. Camp trails intenal frame backpack. \$60. Synthetic fill

mummy style sleeping bag. \$20. 925-245-4570

77 Cessna T-210, 20% share, king radios, O2, autoplt, 2300 hrs. Fresh annual, Based at LVK. 925-443-8831

Waterman 15cfm watercooled compressor with fill panel and storage bottles. Wet Suits, miscellaneous SCUBA equipment. 209-239-3347

Stepper. Excellent condition, great workout. With computer for tracking calories, distance, time, number steps, etc. \$75. 925-443-0743

SNOWBOARD FOR SALE. Hazard brand, size 51, red with bindings. Excellent condition \$200 4-2529 209-599-5071

Universal weight machine,with 10 stations. 200lbs. excellant condition asking \$600. 209-239-3918

Pool table, half size \$45. 925-828-3143

Dive gear like new,used twice.bcd,regulators weights, mask, fins, snorkel, mats, ab gear. \$800.00 for all 209-836-0631

RIDESHARING

Danville - Diablo Rd./Front St. area needs driver/rider to complete four-person carpool. 8:15-5:00. 925-831-1569, ext. 2-9858

Walnut Creek - Would like to start carpool from Rudgear Park and Ride. Hours 7:15-4:15. 925-938-3570, ext. 4-3385

Modesto - 14 psgr luxury vanpool, 8-4:30 schedule, \$113/month - less if you want to help share driving? 209-521-9047, ext. 2-5177

Ceres/Modesto - 14 psgr Enterprise luxury vanpool, 7:00-3:30, \$120/month 209-537-0229, ext. 3-6631

DANVILLE - near Camino Tassajara & Crow Canyon - 2 drivers/riders seeking additional members to carpool from south Danville. 8:00 - 4:45. 925-736-1991, ext. 2-1039

Modesto - Carpool, 2 seats, share driving, flexible 7:30-4 schedule 209-522-7136, ext. 3-3575

SERVICES

PAMPERED CHEF, if interested in home cooking show, great host benefits, good Xmas presents, lots of fun, 925-447-6192

Roofing, 28 yrs experience, fully insured, free estimates 925-454-9200

Call me if you are interested in receiving 20% off on a professional massage. Swedish, Shiatsu, deep tissue and more. 510-791-8623

TUTORING in high school and college chemistry and math. 925-443-2095

Manteca Area - Babysitting and Pet Services. Very reliable. 209-823-5085

SHARED HOUSING

37 Yr. Old women with two children wishes to share a

CHARITY

Continued from page 1

recently held a barbecue that raised \$2,875 for the Firemen’s Fund and the American Red Cross. All food costs for the barbecue were donated by the directorate’s management and several employees. The money was generated from ticket sales as well as collections taken at the barbecue.

• LLESA has organized two special blood drives for Oct. 25 and Nov. 5. Within two days of the announcement, all appointments for both days — more than 100 per day — were filled. A waiting list has been started in case there are any cancellations.

• The Amigos Unidos Hispanic Networking Group is selling tamales to raise money for the American Red Cross. Tamales will be sold for \$14 per dozen and \$7.50 per half dozen. Pick-up is on Friday, Oct. 12, from 11:30 a.m. to 1 p.m. at the LLNL pool area. For more information or to pre-order your tamales, contact Yahel De La Cruz, 4-3507.

• The Chinese American Networking Group is planning to donate all profits from its egg roll sales at the Run for HOME on Oct. 31 to the American Red Cross’ special Sept. 11 fund. To pre-order egg rolls, contact Eric Chow at chow6@llnl.gov or 2-0552.

• In NAI’s Q Division, employees took up a collection for the American Red Cross and netted \$1,311.

• Employees’ children who attend the Children’s Center are also doing their part. The school-age children are donating \$184.51 to the American Red Cross. The children raised the money over the summer in the hope of collecting enough to adopt a manatee and buy one acre each of the Children’s Rainforest in Brazil and one acre of the coral reef in Indonesia. They were able to accomplish their goal as well as donate their extra money to the relief effort.

• The HOME Campaign is adding various funds, such as the American Red Cross and Sept. 11 Fund, to the list of charities for this year’s campaign.

In addition, Johnson Controls, which provides supplemental labor employees to the Laboratory, has announced that it will donate \$1 million to the American Red Cross to support disaster relief efforts.

If your program is raising funds to help the victims of Sept. 11 and you would like some recognition, call *Newsline* at 3-3103.

INTERNAL TRANSFER OPPORTUNITIES

Tag	Requisition	Classification	Title	Organization
CO	2929	105.1	Associate administrator	Computation AD Office
SS	2483	105.1	Associate administrator	Safeguards & Security
CH	2900	105.2/3	Administrator	Chemistry & Materials Science
FI	2829	105.3	Administrator	Chief Financial Officer's Office
HR	2963	112.1	Human resources specialist	Human Resources
HR	2913	112.3	Human resources specialist	Human Resources
SS	2647	126.1/2	Security administrator	Safeguards & Security
EZ	2866	150.2	Senior resource analyst	Energy and Environment
FI	2676	151.2/151.3	Senior accountant	Finance
DO	2946	200	Associate director	Director's Office
NA	2855	200	Senior analyst	NAI
PT	2635	220	Post doc staff member	Physics & Advanced Technologies
BS	2886	225	Biomedical scientist	Biology and Biotechnology Research
BS	2954	225	Biomedical scientist	Biology and Biotechnology Research
EP	2834	230	Environmental scientist	Environmental Protection
CH	2931	242.0/249	Chemist	Chemistry & Materials Science
CH	2788	249	Nuclear engineer	Chemistry & Materials Science
ME	2905	249	Group leader	Mechanical Engineering
PT	2708	249	Engineer	Physics & Advanced Technologies
PT	2730	270	Theoretical physicist	Physics & Advanced Technologies
AI	2134	285	Computer scientist	AI&S
CO	2862	285	Computer scientist	Computer Applications
CO	2877	285	Computer scientist	Computer Applications
CO	2879	285	Computer scientist	Computer Applications
CO	2890	285	Computer scientist	Computer Applications
CO	2904	285	Computer scientist	Computer Applications
ME	2859	337.1/339.2	Technical associate	Mechanical Engineering
BO	2924	405.3	Administrative specialist III	Business Services
EE	2918	405.3	Administrative specialist III	Electronics Engineering
PM	2896	405.3	Administrative specialist III	Procurement & Materie
PT	2758	405.3	Administrative specialist III	Physics & Advanced Technologies
PT	2824	405.3	Administrative specialist III	Physics & Advanced Technologies
BO	2864	405.4	Department secretary	Business Services
CO	2928	405.4	Administrative specialist IV	Computation AD Office
DO	2590	405.4	Administrative specialist IV	Director's Office
HC	2780	405.4	Administrative specialist IV	Hazards Control
TC	2747	462.1	Material handler	Telecommunications Systems
BS	2923	502.1	Scientific technician	Biology & Biotechnology Research
EP	2850	504.2/3	Technologist	Environmental Protection t
CO	2878	525.2/3	Computer support technologist	Computer Applications
TC	2740	531.3	Sr. Technologist-electronics	Telecommunications
EE	2856	532.1	Fabrication technician	Electronics Engineering
ME	2883	533.1	Mechanical technician	Mechanical Engineering
EP	2768	533.2	Technologist	Environmental Protectiont
ME	2741	534.2/3	Design drafter/designer	Mechanical Engineering
BS	2858	707.1	Administrative/services scholar	Biology and Biotechnology Research
ME	2845	961.1/2	Fabrication assistant I	Mechanical Engineering

home with someone who needs elder care or care in exchange for rent. References 925-447-2076

Livermore - -Room/private bath, full privileges, N/S, no pets, quiet, woman preferred, \$600/mo, 1/2 utilities except phone, \$350 deposit 925-294-5977

Livermore - Room for rent, beautiful home on 1 acre next to vineyards, spa, bike to lab. Internnet & digital cable. Kitchen & laundry privileges. \$450-\$550 925-373-2910

Livermore - -room available, 4.5 miles from Lab, \$450/month, utilities included. Single, N/S, no pets. Share kitchen, laundry facilities. 925-443-3326

Livermore - Room available, quiet and clean, re-painted. 450/mo. + 1/3 utils. and deposit. 5 mins. to Lab. Non-smoker/drinker,no pets. Single perf. female. 925-449-3776

TRUCKS & TRAILERS

1992 - Ford F250 custom. New paint, tires/wheels, brakes, campershell, bedliner, storage kit & more! \$7k obo. 209-832-2790

1995 - 3/4 ton Dodge Conversion Van,V-8, TV/VCR, excellent cond., power rear seat/bed, oak cab./trim, captains chairs, many extras. \$12,500 or obo. 925-454-1526

97 - Blk Toyota Tacoma,under 50K,great cond,4wd,must sell for move, Take Over Payments 209-474-6062

1990 - Ford F250, XLT Lariat, Extended Cab, Deisel, w/Banks Power Pack, many extras, \$6250. 209-946-0645

1954 - F-100 302,C4,runs great,tinted, pws/seats,xtra stock & custom parts,350 miles, primed,you finish to suit. \$5000 925-679-1288

1987 - Dodge Dakota LE V6 74,000 Miles \$2,200 925-679-0310

1979 - 1979 Ford Econoline 350 van. 1 ton 351 M small block. Runs great. \$1000.00 or best offer. 510-278-5842

1993 - GMC Yukon SLE, 4x4, original owner. 84,000 miles. Good condition, \$11,500. 209-836-3041

1963 - Ford Truck F100,Drive trane good, started restoration. \$1000 209-239-6402

VACATION RENTALS

Maui, HI, condo, RCI Gold Crown, large 1 br. 2 bath sleeps 4. May 9 through 16 or call early for different week, web site discount. 925-447-0856

SOUTH LAKE TAHOE - 3 Bedroom 2 Bath Chalet, nicely furnished,all amenities, Park with Lake, tennis etc.Off-season Rates! Reserve Now! 209-599-4644

Pinecreast - (Off Sonora Pass Road), 3 bdrm/2 bath, frplc w/wood, microwave, barbecue, pool table, large deck and view up No. Fork of Tuolumne, \$175/wknd. 925-449-5513

Twain Harte - Fully furnished.2bdr 2full bath. Washer,dryer,microwave,cable TV,VCR, dishwasher,and more. Close to Pinecrest Lake.\$150 wknd \$300wk. 925-443-2808

Maui, HI - Kahana Reef oceanfront 1BR/1BA condominium. Beautiful two-island view, oceanside pool, and BBQs. Low LLNL rates for year-round reservations. 925-449-0761

WANTED

Wanted: NuSkin distributor to buy Celltrex from. 510-530-1884

Bike Trailer - that holds two children, good condition, reasonable price. 925-837-0863

Need Patio chairs & table for reasonable price or giveaway. 925-292-5051

Used metal fence panels. Galvanized type preferred. Good condition. 925-447-7912

Housekeeper wanted in Danville to clean couples house every month. Must be reliable, dependable, honest and thorough. 925-648-0671

Fun Players Wanted: Recreational non-competitive flag/touch football on weekdays or weekends. All skill and no-skill are welcome. 925-924-1359

Tile Saw, Purchase or Rent, Wet-Cutting, large enough to cut 12 in. diagonal, Needed in Oct/Nov. 925-552-6684

Wanted: trumpet for beginner. Phone evenings or lv. msg. 925-449-9368

I need a small riding type garden tractor or lawnmower. (Does not need to have a mowing or other attachments). Please call 925-449-5441

Wanted Volvo Pv 544 or Pv444 Body must be in good condition. Will consider not running automobile. Would also consider 122 in good conditon. 209-835-2917

Baseball glove for lefthand. mask and snorkel gear w/ or w/o fins, gravity boots. 510-

531-4399

Viewsonic PT795 monitor - discontinued model 925-447-8415

Wanted Bowflex 209-931-2466

Help Wanted - \$12.00 hr. to drive me and my 7 year old daughter to appts. in my specially equipped van. 925-449-4568

Two Used lake or ocean kayaks 925-443-4188

Want to buy Bow Flex fitness machine, preferably with attachments. 925-895-5731

Guidelines

Newsline is not responsible for any errors contained in the classified ads. It is up to the employee to proofread his or her ad to make sure it contains the correct data, including the phone number.

Employees are reminded that only car- and vanpool ads may contain Lab extensions. E-mail addresses are not allowed.

Due to space limitations, *Newsline* cannot run ads that are submitted in all capital letters. “Personals” ads are not permitted either.

Employees may submit one ad per category, but may not include the same ad in more than one category.

Ads may only be submitted through the Employee Ads Web Services site <https://www-ais.llnl.gov/newsline/ads/>



THE BACK PAGE

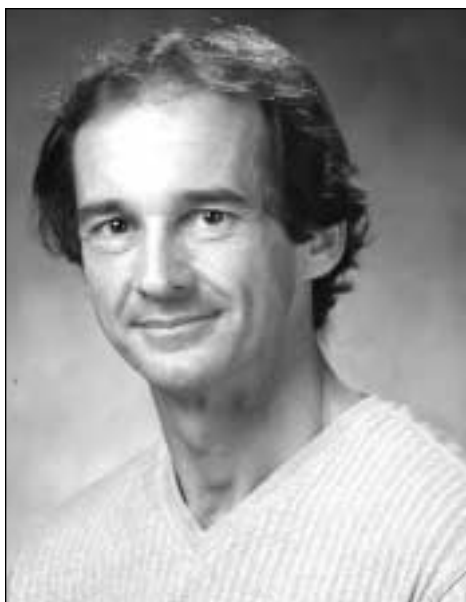
X-RAY

Continued from page 1

Martz' expertise has recently contributed to airport security articles in *The Wall Street Journal*, *San Francisco Chronicle*, *The New Yorker* magazine and other regional publications. Martz is also featured in an upcoming article in the science journal, *Nature*. Additionally, two separate television crews from TechTV network, based in San Jose, recently spent time interviewing Martz for news and feature programs.

When Martz talks to the media, he addresses the committee's study of "new technologies in passenger, baggage and cargo scanning using thermal and X-ray scanning, industrial CT scans, and the hardware and software to help run them."

The industrial CT scans, similar to those used



Harry Martz

by the CNDC here at LLNL, take multi-dimensional X-ray radiographic images, reconstructing them and giving the operator a clearer picture of the items within a bag.

"Some items can be very difficult to detect if they are at a head-on angle to the X-ray source," said Martz. "A knife and a metal ruler could be virtually indistinguishable from the end."

One of the more promising new scanning methods Martz describes is that of X-ray backscatter, a low-energy and low-dose X-ray that penetrates the clothing, but not the body and

reflects X-rays back toward the source. Once detected, it provides an image of concealed objects. This eliminates the need to have X-rays pass through the body and greatly reduces the amount of X-ray exposure.

"Amount of exposure is one concern," Martz explained, "but the primary reason we haven't seen this technology applied in commercial airports is lack of privacy. Flight attendants and others have expressed fear that the detailed images emerging from beneath one's clothing may be misused."

X-ray backscatter scanners are currently in use in a few U.S. prisons, where, according to Martz, they have been very useful as an alternative to the traditional pat-down search of both prisoners and visitors to the prisons.

Now that many Americans have higher airport security concerns, Martz believes that the Commercial Aviation Security Committee and the FAA may reconsider the backscatter technology, "It is very accurate," Martz said, "You really can't hide anything under your clothes."

LASER

Continued from page 1

Army has allocated \$38.7 million to the program from 2002 through 2004 in its technology program objective memorandum.

The LLNL team consists of project manager Brent Dane of Laser Science & Technology, Bruce Roy, Bill Manning, Jim Wintemute, Mark Rotter, Balbir Bhachu, Bob Sawvel, Laurence Flath, Randall Hurd, Eric Johansson, Dennis Silva, Jim Brase; Barry Freitas, Vern Williamson, Roy Merrill, Joe Satarino, Jacqueline Crawford, Everett Utterback, Ray Beach, Larain Dimercurio, Kurt Cutter, Jong An, Chuck Boley, Lisle Hagler and former LLNL employees Scott Fox, Mark Emanuel and Jay Skidmore.

"The delivery and installation of the laser at the High Energy Laser System Test Facility is a

major milestone in the SSHCL development program," said Bill Goldstein, associate director of Physics and Advanced Technologies.

The technology used in the program is based on solid-state lasers developed by the Department of Energy for inertial fusion research and the Stockpile Stewardship Program.

When developed as a compact 100-kW system, the SSHCL will be highly suited as a mobile laser-weapons system to protect against "tactical" threats, including short-range artillery, rockets and mortars. There is currently no effective protection against these weapons on the battlefield. A mobile weapon based on the 100-kW system is being considered as a component of the U.S. Army's Future Combat System (FCS).

While at White Sands, the U.S. Army will use the 10-kW SSHCL to investigate laser-weapon system technical issues such as lethality, laser energy transport in the battlefield environment,

optical pointing and tracking, and cost effectiveness.

LLNL is developing the 100-kW system and partnering with industry that includes: General Atomics, Raytheon, PEI Electronics Inc., Northrop Grumman Corp., Goodrich Corp., Armstrong Laser Technology and Saft.

The 10-kW prototype is pumped by flash-lamps and requires 1 megawatt of input power to produce on average a 13-kW laser beam. It delivers 200 pulses with 500 Joules (a measurement of energy) per pulse for a total of 100,000 Joules (100 kJ).

The ultimate objective of the Army's SSHCL program is to build a next-generation system with enough electrical efficiency to produce a 100-kW laser beam from 1 megawatt of input power, using diodes to pump a new crystalline laser material.

BOEING

Continued from page 1

and observable "signature" identifying the warhead. The signature comes from a "seedant," or identifying chemical, that is released upon impact and then recorded by ROCSS's infrared sensor.

Boeing marked the successful integration and operation of the sensor suite onto an airborne platform with an award recognizing team members including Joel Bowers, Jim Curry, Mike Gerassimenko, Paul Kuzmenko, Darlene Litcher, Chuck Stevens, Jim Thournir and project leader Alex Pertica.

Ronald Peaslee, representing Boeing, presented the award in a recent ceremony at the Lab. "Boeing is big on recognizing excellence. This project is ahead of schedule and under budget," Peaslee said. "You did some special things for us and worked long hours to meet very demanding requirements. We want this work recognized by the industry as a whole."

Pertica said the technology was developed over the last decade as part of the Lab's work in nonproliferation and proliferation detection technologies. The advantage of the Lab infrared spectrometer is its ability to record accurate spectra despite the rapid changes in signal intensity inherent in ballistic missile tests, he said.

The project included selection of a seedant, deuterium fluoride, and development of hardware and software for integration onto the Gulfstream aircraft. Extensive ground and in-flight tests were

conducted, including simulated payload detonations at the Lab's High Explosive Applications Facility (HEAF) were used to validate the system. The concept was also tested on intercept missiles and "sled" tests at White Sands, New Mexico. Sled tests consist of firing a rocket along a 10-mile rail into a target. "The results of those tests were really good," Pertica said.

ROCSS will be fielding the upcoming missile defense intercept tests near the Kwajalein Missile Range in the Marshall Islands. In this "Lethality Live Fire Test and Evaluation," scheduled for later this year or early next, a prototype anti-ballistic missile will be launched to intercept a mock warhead. The warhead reentry vehicle will contain the seedant. When the anti-ballistic missile's "kill vehicle" strikes and tears open the reentry vehicle, the deuterium fluoride will be released.

"We use deuterium fluoride because it has a unique spectral signal that can't be mistaken for something else," Pertica explained.

The flash of light from the explosion will be recorded from 850 miles away by the ROCSS equipment aboard the specially adapted Gulfstream aircraft. Pertica and Curry will be aboard manning the sensor system. After the test, the aircraft will return to base and the data will be analyzed on the ground to verify the performance of the test.

Pertica said the current ROCSS system could serve as a foundation for more sophisticated future systems that could identify missile types from booster exhaust and, eventually, the type of warhead—nuclear, chemical or biological.

"The technology is not there yet," he said, "but this could serve as a first step."



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